IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:	Victor Casana Giner et al.	
Int'l Serial No.:	PCT/ES2004/000562	Examiner:
Int'l Filing:	17 December 2004	Art Unit:
Title:	CONTINUOUS MULTI-MICROENCAPSULATION PROCESS FOR IMPROVING THE STABILITY AND STORAGE LIFE OF BIOLOGICALLY ACTIVE INGREDIENTS	Confirmation No.

VIA ELECTRONIC
Commissioner for Patents
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PRELIMINARY AMENDMENT

Along with submission under 35 U.S.C. 371, Applicant submits the following preliminary amendment.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 22 of this paper.

Amendment to the Claims:

The listing of claims will replace all prior versions, and listings of claims in the application:

List of the Claims:

1. (Original) Continuous multi-microencapsulation process, by means of in situ interfacial polymerization of biologically active materials characterized in that,

(a) in a first step it is added to an oil phase [that contains optionally at least a biologically active material] a water phase containing a polymerization initiator and optionally, at least a biologically active material; further exists at least one surfactant in at least one of the two mentioned phases, and there exists a biologically active material in at least one of the two phases,

(b) In a second step, it is added [to (a)] a solution or dispersion in water that contains at least one hydrocolloid, this producing a phase inversion and the hydrocolloid begins to be deposited and polymerized on the walls of the new formed drops [consisting in a water in oil emulsion], occurring also a cross-linking of the hydrocolloid polymers, optionally in the presence of cations,

(c) In a third step, it is added [to (b)] a solution or dispersion in water that contains at least one protective colloid, that begins to be deposited on the surface of the drops of water in oil, and to polymerize and cross-link with itself and the hydrocolloid,

(d) In a fourth step, it is added [to (c)] a solution or dispersion in water of a primary surfactant that allows a reduction of the size of the water in oil drops,

(e) In a fifth step, during the process of reduction of size, the partially formed microcapsules are deaglomerated and reaglomerated, happening eventually ah enclosure of drops inside bigger drops (multi-microencapsulation),

(f) When enough time has passed in order that the oil [water in oil] drops are covered by at least one hydrocolloid and at least a protective colloid, the temperature is increased in order to strengthen the wall of the mentioned drops; at this time the drops are already microcapsules or multi-microcapsules suspended in water.

(g) Optionally, the formulation is dried for obtaining dust, optionally it is reformulated by means of state of the art techniques to obtain (or to mix the microcapsules with) wettable powders, gels, cosmetic creams or medicinal, bath products, microorganism media; optionally additives are added (optionally antiagglomerating agents) for microcapsules' dried formulations.

(h) All the process -except optionally step (g)- is carried out under continuous agitation.

2. (Original) Process for the preparation of a suspension of microcapsules characterized in that:

(a) Two different solutions (Fig.1) 1a (oil) and 1b (water) are mixed by addition of 1b to 1a, these solutions containing active ingredients and optionally free or sequestered cations to be liberated later,

(b) Thanks to a food emulsifier that can be in 1a or in 1b, an emulsion of water drops (10) into the oil phase (9) is formed. This step is finished with the formation of emulsion 1c, where in the oil phase (9) are solubilized or dispersed -preferably liposoluble- active ingredients; it is also formed an oil in water emulsion, with the water droplets (10) containing -preferably hydrosoluble- active ingredients, being optional that the solubility [of the active ingredients] in water or in oil is modified by derivatization of the active ingredient(s),

(c) Then, it is added to existing emulsion [1c] the solution 2b, having 2b at least one hydrocolloid [able to be polymerized and cross-linked] and optionally containing at least one active ingredient,

(d) It follows a phase inversion, having then dispersed drops (11) that are an emulsion of water (12) in oil, dispersed in the continuous phase (24), namely, water,

(e) when the polymerization and cross-linking reactions are deemed to be finalized, reaching a reduction of particle size to about 1-30 m, the temperature that remained at about 30-70 °C is raised to 60-100 °C.

(f) Finally it is added a food grade viscosity modifier.

(g) Optionally, the formulation may be spray-dried or any state of the art technique, and to be collected to form dry powders, self-emulsifiable powders, gels, creams or any other form that may contain them, including oil dispersions, as well as to be submitted to a liophyllization unit operation.

3. Cancelled.

4. (Original) Process of microencapsulation of biologically active materials according claim 1, characterized in that the protective colloid(s) belong to the chemical group of hydrocolloids.

5. (Currently Amended) Process of microencapsulation of biologically active materials according ~~claims 1 and 2~~ claim 1 characterized in that the hydrocolloid(s) and the protective colloids are preferably chosen among the group of: chitosans, starch, dextrins, cyclodextrins, celluloses, lignin, pectines, agar, alginates, carrageens, gelatins, guar gum, arable gum, gelatin, tragacanths, lignosulfonates, Caraya gum, Cerationia siliqua gum, saponines, xantan gum, seed gums, galactomanans, arabanogalactams, beta-glucans, inulin, psyllium, acacia gum; in all their isomeric and stereochemical forms, in all their variations regarding quantity and proportion of monomers or oligomers constituting the hydrocolloid, in all presentation forms, as salts of metal cations or nitrogenated, sulfurated or phosphorinated compounds, as well as any derivatization form of the aforementioned hydrocolloids.

6.-7. Cancelled.

8. (Currently Amended) Process of microencapsulation of biologically active materials according ~~any preceding claims~~ claim 1, characterized in that the finally formed microcapsules (7b) have a particle size of 0.1-100 um, preferably 1-30 urn, more preferably 1-5 um.

9.-11. Cancelled.

12. (Currently Amended) Process of microencapsulation of biologically active materials according ~~any preceding claims~~ claim 1, characterized in that at least one hydrocolloid forming the wall is substituted by a hydrogel, optionally, albumins, alginates, polycarboxilates, poli-L-lactid, starches and derivatives of all of them.

13. Cancelled.

14. (Currently Amended) Process of microencapsulation of biologically active materials according ~~any preceding claims~~ claim 1, characterized in that the aqueous solution of hydrocolloid contains a binary or ternary mixture of the hydrocolloids selected ~~according to claim 5~~.

15.-22. Cancelled.

23. (Currently Amended) Process of microencapsulation according ~~any suitable combination of the preceding claims~~ claim 1, characterized in that after the drying of the microcapsules, these are reformulatied and dispersed in an oil phase or in a gel or in any semi-solid material or ethanolic solution or organic solvent.

24. (Currently Amended) Process of microencapsulation of biologically active materials according ~~any preceding claims~~ claim 1, characterized in that

the resulting microcapsules are used in any foodstuff (solid or liquid or including gases), optionally but not limited to: cereals and derived (optionally muesli, cereals for milk), pastry shop, dairy products, nutritional supplements, sugars and derived (optionally chocolates, sweet, nougats, marzipans), sweet dietary (with low level of calories), in regime foods and for diabetics, oils and derived, milky and derived, eggs, vegetables and vegetables, vegetables, fruits, tubers and derived, eatable shafts, snacks, appetizers, eatable roots (optionally licorice), bay and wild products, preserves of fruits, dry fruits, meats, sausages, fish, shellfish and crustaceans and their preserves, alcoholic and not alcoholic drinks, carbonated drinks or not carbonated, juices, syrups, nectars, spices, condiments, pre-cooked foods, pre-processed foods (frozen mass of bread), pizzas, honey.

25. (Currently Amended) Process of microencapsulation according ~~any suitable combination of the preceding claims~~ claim 1 characterized in that as biologically active materials are choser at least a compound chosen from the group of omega-3 fattay acids, optionally also omea6 and/or omega 9, coming from fish of flax oil and these omega fatty acids are accompanied optionally by antioxidants -preferably from green tea- and the mricrocapsules produced thereof are used in backery, cookies, muesli or cereal products with high fiber content, being the total content, with respect 100 grams of final product (e.g., a cookie), of omega 3 plus omega 6 (if present) plus omega 9 (if present) about 50 mg to 400 mg.

26. Cancelled.

27. (Original) Microcapsules produced by a continuous process of microencapsulation, characterized in that (a) contain biologically active materials (b) the microcapsules wall is made by a mixture of at least two hydrocolloids (including hydrogels as particular case of hydrocolloids), such mixture polymerized and cross-linked, (c) the polymerization and cross-linking grade and the nature of hydrocolloids influence the release rate and the protection against oxygen and/or light and/or temperature, (d) the microcapsules have in their core an emulsion water in oil, existing optionally biologically active materials in the oil phase, optionally in the water phases and optionally in all continuous phases, and moreover, the core of the microcapsules may contain smaller microcapsules (multi-microencapsulation possible at least to five degrees), (e) the mean particle size measured with a Master Sizer type laser equipment is 0.1-100 urn, preferably 1-10 urn (f) they are produced by a continuous process of multi-microencapsulation process by interfacial in-situ polymerization process.

28. (Currently Amended) Microcapsules produced according ~~any of the preceding claims~~ claim 27 where the biologically active materials are released by at least a factor belonging to the group: pH, temperature, pressure, ionic force, osmosis, volatilization, presence of compounds that dissolve the microcapsules wall (eventually enzymes or chemical compounds).

29. Cancelled.

30. (Currently Amended) Microcapsules according ~~any appropriate combination of the preceding claims~~ claim 27 characterized in that they are

used for providing anabolites and/or nutrients in microbiological cultures in a constant or quasi-constant rate.

31.-33. Cancelled.

34. (Currently Amended) Microcapsules according ~~any appropriate combination of the preceding claims~~ claim 27 characterized in that they are used for providing beneficial for the health materials and the microcapsules are added to natural or synthetic sweeteners, salt, pepper, spices and other condiments, in such a way that the addition of such condiments to other foodstuffs increment the nutritive value or the health benefit of such foodstuffs.

35. Cancelled.

36. (Currently Amended) Formulation of microcapsules according to ~~any appropriate combination of the preceding claims~~ claim 27, because the active ingredients are chosen from the group: green tea, black tea, cocoa, red wine or grapes or marcs, cider, apple juice or apple, cereal germ or bran, carrots, chili, allium, horseradish (in particular spicy horseradish).

37. (Currently Amended) Process of microencapsulation of biologically active materials beneficial for the human or other animals' health, according to ~~any suitable combination of the preceding claims~~ claim 1, characterized in that at least one of the biologically active compound present in the formulation is preferably chosen from the groups:

(a) Flavonoids in general and derivatives: anthocyianidins, pro-anthocyanidins, oligomer-procyanidine, isoflavones, chalcones, catechin, epihatechin, epicatechin gallate, epigallocatechin, epigallocatechin gallate,

eriocitrin, narirutin, rutin, naringin, myricitrin, hesperidin, myricetin, eriodictyol, fisetin, quercetin, naringenin, luteolin, hesperitin, kaempferol, isorhamnetin, apigenin, rhamnetin, galangin, quercitrin, quercetin, diosmetin, taxifolin, galandin, biochanin A, genistein, eriodictyol, chrysin, hydroxytyrosol, oleuropein, glabridine, licochalcone, daidzein, matairesinol, secoisolariciresinol, enterodiol, enterolactone, equol, desmethylangolensin, luteoferol, luteolinidin, apiferol, apigenidin, leucocyanidin, taxifolin, pelargonidin; and derivatives thereof;

(b) phenolic acids in general and derivatives (preferably esters, glycosides, rutinosides and amines): gallic, sinapic, syringic, caffeic, chlorogenic, ferulic, (o-, m- or p-) coumaric, guaiacol, (o-, m- or p-) cresol, 4-ethylphenol, 4-vinylguaicol, eugenol, p-hydroxybenzoic, procatechuic, vanillic, hydroxycinnamic, tanins in general tannins, ellagiotannins, gallotannins; and derivatives thereof;

(c) esctructurally combined amides comprising hydroxycinnamic acids and anthranilic acids (avenanthramides), avenasterol, hydroxycinnamic acids and long-chain fatty acids or alcohols -and derivatives thereof-; indoleamines (e.g. melatonin); inulin, glutation;

(d) terpenoids in general and derivatives, monoterpenes, diterpenes, sesquiterpenes, triterpenes, tetraterpenes including the carotenoids: alfa-carotene, phytoene, cyclo-artenol, beta-carotene, ionone, zeaxanthin, capsanthin, astaxanthin, canthaxantin, violaxanthin, mutatoxanthin,

luteoxanthin, auroxanthin, neoxanthin, apo-carotinal, xanthophylls; and derivatives thereof;

(e) commonly synthesized antioxidants for its use in foodstuffs and derivatives of the type of butylhydroxyanisol, 2,6-di-tert-butylhydroxytoluene, tert-butylhydroquinone, 2,6-di-tert-butylhydroquinone, 2,6-diterbutyl-4-hydroxymethylphenol, 2,4,5-trihidroxibutyrophenone; and derivatives thereof, tocopherols (e.g. alpha, beta, gamma and delta tocopherols -and derivatives thereof-; Tocotrienols (alpha, beta, gamma and delta tocotrienols -and derivatives thereof-); Tocochromanols;

(f) alpha-lipoic acid; coenzime Q-10; vitamins; aminoacids (preferably L-arginine, cistina and cisteine) and their corresponding organic polymers like oligopeptides, peptides -preferably carnosine, carnitine, glutathion-; enzymes; enzyme inhibitors (preferably phenolases or oxigenases or lipooxigenasas or lipases inhibitors;

(g) minerals and oligoelements, especially those involved in redox processes in vivo like selenium, zinc, magnesium;

38. (Currently Amended) Process of microencapsulation of biologically active materials according to ~~any suitable combination of the preceding claims~~ claim 1, characterized in that at least one of the biologically active compounds present in the formulation preferably has its origin in: Medicago sativa, Pimenal officinalis, Hibiscus abelmoschus, Angelica archangelica, Galipea officinalis, Pimpinella anisum, Ferula foetida, Ferula asafetida, Melissa officinalis, Myroxylon pereirae, Ocimum basilicum, Pimenta acris, Citrus

aurantium bergamia, Prunus amygdalus, Citrus aurantium, Citrus aurantium amara, Piper nigrum, Prunus spinosa, Aniba rosaeodora, Camelia oleifera, Camelia sinensis, Carum carvi, Elettaria cardamomum, Ceratonia siliqua, Daucus carota, Dacus carota sativa, Cascarilla, Apium graveolens, Anthemis nobilis, Matricaria chamomilla, Anthemis nobilis, Anthriscus cerefolium, Cichorium intybus, Cinnamomum spp., Cinnamomum zeylanicum, Cymbopogon nardus, Salvia sclarea, Trifolium pratense, Theobroma cacao, Coffea arabica, Coriandrium sativum, Cuminum cyminum, Taraxacum officinale, Sambucus nigra, Edelweiss, Helichrysum italicum, Foeniculum vulgare, Trigonella foenumgraecum, Arabidopsis spp., Zingiber officinale, Citrus grandis, Psidium guajava, Humulus lupus, Marrubium vulgare, Monarda punctata, Hyssopus officinals, Jasminum officinale, Jasminum grandiflorum, Juniperus spp. Juniperus comunis, Eucaliptus officinalis, Cola acuminata, Laurus nobilis, Lavandula spp. Lavandula hybrida, Taxus baccata, Citrus medica limonum, Myristica fragans, Marjorana hortensis, Thymus spp., Thymus officinalis, Thymus mastichina, Ilex paraguarensis, Chamomilla recutita, Saccharum officinarum, Myristica fragans, Allium cepa, Citrus aurantium dulcis, Carum petroselinum, Mentha pulegium, Mentha piperita, Pimenta officinalis, Chimaphila umbellate, Punica granatum, Pelargonium spp., Pelargonium graveolens, Rosmarinus officinalis, Crocus sativus, Salvia app., Salvia officinalis, Mentha spicata, Mentha viridis, Satureia hortensis, Satureja hortensis, Origanum majorana, Tamarindus indica, Citrus reticulata, Artemisia dracunculus, Thea sinensis, Thymus vulgaris, Polianthes tuberosa,

Curcuma longa, Prunus serotina, Thymus serpillum, Satureja Montana, Cananga odorata, Curcuma zedoaria, Plantago major, Adansonia digitata, Ananas comosus, Artocarpus altilis, Carica papaya, Lycopersicon esculentum, Cephalophus spp., Vaccinium myrtillus, Thymus aragonensis, Thymus spp., Citrus aurantiifolia, Citrus paradisi, Cucumis melo, Cucurbita spp., Vitis spp., Vitis vinifera, Mangifera indica, Lamiaceae (Coleus, Hedeoma, Hyptis, Leonurus, Leucas, Lycopus, Marrubium, Mentha, Monarda, Perilla, Prunella, Salvia, Stachys, Teucrium, Thymus), Cannabis spp., Digitalis lanata, Adonis vernalis, Aesculus hippocastanum, Frazinus rhychophylla, Agrimonia supatoria, Rauvolfia sepentina, Andrographis paniculata, Areca catechu, Atropa belladonna, Berberis vulgaris, Ardisia japonica, Betula alba, Ananas comosus, Camellia sinensis, Cinnamomum camphora, Camptotheca acuminata, Potentilla fragarioides, Erythroxylum coca, Papaver somniferum, Colchicum autumnale, Claviceps purpurea, Digitalis purpurea, Digitalis lanata, Glaucium flavum, Papaver somniferum, Gossypium spp., Hyoscyamus niger, Camptotheca acuminata, Piper methysticum, Lobelia inflata, Crotalaria sessiliflora, Nicotiana tabacum, Physostigma venenosum, Ephedra sinica, Cinchona ledgeriana, Rhododendron molle, Datura spp., Taxus brevifolia, Strychnos nux-vomica, Stevia rebaudiana, Theobroma cacao, Valeriana officinalis, Pausinystalia yohimbe, Ephedra spp. Crataegus oxyacantha, Hamamelis virginiana, Hydrastis Canadensis, Hypericum perforatum, Potentilla erectra, Ledum palustre, Salvia officinalis, Chamomilla recutita, Arctostaphylos uva, Eucommia ulmoides, Mytilus galloprovincialis, Diplazium

esculentum, Manihot utillissima, Sauropous androgynus, Terminalia arjuna, Iberis amara, Crataegus spp., Arbutus unedo, Cynara scolymus, Amaranthus caudatus, Alchornea laxiflora, Alpinia officinarum, Xanthophyllomyces dendrorhous, Crataegus monogyna, Taxus yunnanensis, Bacopa monniera, Cistus albidus, Ocimum basilicum, Rosmarinus officinalis, Thymus vulgaris, Bixa orellana, Centella asiatica, Urtica dioica, Agrocybe aegerita, Crataegus laevigata, Satureja hortensis, Crocus sativus, Coccinia indica, Brugia malayi, Rubus spp., Silybum marianum, Cannabis spp., Cannabis sativa, Hypericum perforatum, Rhus coriaria, Olea europaea, Cyclopia intermedia, Ginkgo biloba, Lentinus lepideus, Pseudomonas putida, Sargassum micracanthum, Pinus radiata, Pinus sp., Phaseoulus mungo, Cicer arietinum, Vigna sinensis, Phaseolus aureus, Dolichos lablab, Cajanus cajan, Vicia faba, Dolichos biflorus, Phaseolus lunatus, Phaseolus aconitifolius, Pisum sativum, Psophocarpus tetragonolobus, Arachis hypoagea, Brassica spp., Brassica campestris, Brassica napus, Valeriana officinalis, Echinacea purpurea, Echinacea pallida, Echinacea angustifolia, Glcyrrhiza glabra, Seronea repens, Vaccinium macrocarpon, Tancetum parthenuum, Tancetum parthenuum, Vaccinium macrocarpon, cereals, seed fruits, silvestre bays, leguminosae, green tea, black tea and microorganisms able to produce long-chained unsaturated fatty acids.

39. Cancelled.

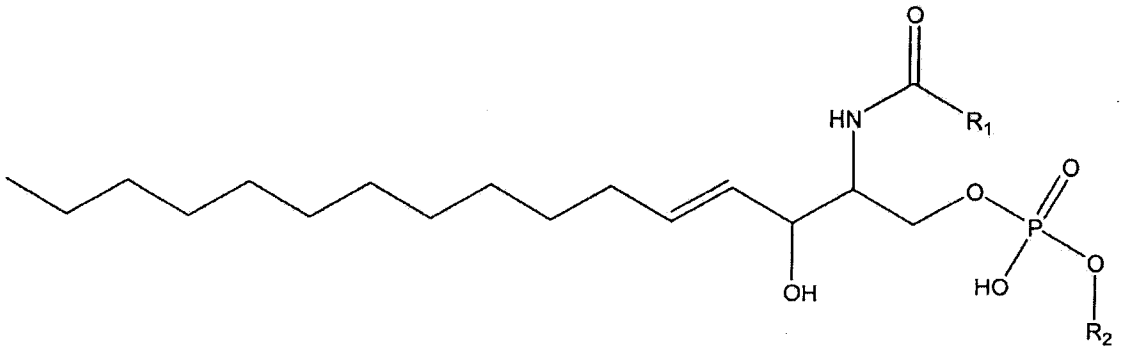
40. (Currently Amended) Process of microencapsulation of biologically active materials according to ~~any suitable combination of the preceding claims~~

claim 1, characterized in that at least one of the biologically active materials present in the formulation consist in probiotic bacteria, optionally acid lactic-bacteria and more preferably chosen among the group: Lactobacillus casei., L. acidophillus, L. rhamnosus, L. paracasei, L. gasseri, L. fermentum, L. plantarum, L. salivarius, L. crispatus, L. bulgaricus, L. fermentum, L. reuteri, Bifidobacterium infantis, B. bifidum, Streptococcus termophilus, S. bovis, Enterococcus durans, E. faecalis, E. Gallinarum, Escherichia coli, Propionibacterium freudenreicheii, or bacteria or fungi or yeasts genetically modified in that the beneficial genes -characterizing the beneficial properties of probiotic bacteria- have been inserted.

41.-42. Cancelled.

43. (Currently Amended) Process of microencapsulation of biologically active materials according to ~~any suitable combination of the preceding claims~~ claim 1, characterized in that at least one of the biologically active materials is chosen among the group of compounds represented by the molecular structures (A) and (B) in all their stereochemical and isomeric variations:

Compound(s) A

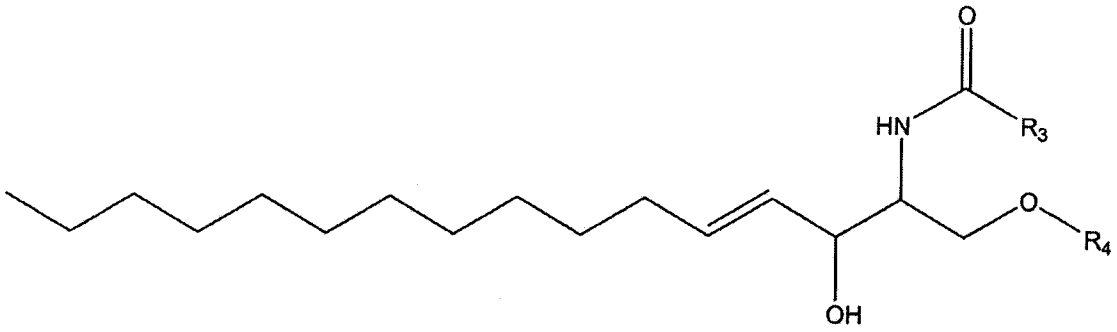


wherein,

R_1 is an omega-3 or omega-6 fatty acid esterified

R_2 is an omega-3 or omega-6 fatty acid esterified

Compound(s) B



R_3 is an omega-3 or omega-6 fatty acid esterified

R_4 is an omega-3 or omega-6 fatty acid esterified

44. (Currently Amended) Process of microencapsulation of biologically active materials according to ~~any suitable combination of the preceding claims~~ claim 1, characterized in that at least one of the biologically active materials consists preferably in at least one unsaturated long-chain fatty acid (at least 6 Carbon atoms), in any isomeric and/or stereochemical configuration, as well as any derivatives thereof (preferably esters, ethers, glycerides, phospholipids, sphingolipids, and more preferably, diglycerides, triglycerides, phospholipids or compounds A and/or B): steradionic, eicosapentaenoic, docosahexaenoic, docosapentaenoic, linoleic and conjugated linoleic acids, linolenic, gamma-linolenic, alfa-linoleic, dihomogamma-linolenic, arachidonic, oleic acid.

45. (Currently Amended) Process of microencapsulation of biologically active materials according to ~~any suitable combination of the preceding claims~~ claim 1, characterized in that the fatty acids are chosen preferably from the

group of acids: oleic, steradionic, eicosapentaneoic, docosahexaenoic, linoleic, conjugated linoleic, gamma-linolenic, alfa-linolenic, dihomogamma-linolenic, arachidonic.

46.-47. Cancelled.

48. (Currently Amended) Process of microencapsulation of biologically active materials according to ~~any suitable combination of the preceding claims~~ claim 1, characterized in that the unsaturated long-chain fatty acid (of at least 6 Carbon atoms) come from the following natural sources or from genetically modify organisms of the following natural sources, preferably from:

(a) vegetable origin: Boraginaceae, (Borago spp., Borago officinalis); Linaceae (Linum usitatissimum, Linum arvense, Linum sativum); Onograceae (Oenothera biennis); Grossulariaceae\ (Ribes nigrum), Zea Mais, Gossypium hirsutum, Carthamus tinctorius, Glycine max.

(b) algae preferably: Graciliariceae (Gracilaria spp); Gigartinaceae (Iridaea spp.); Kallymeniaceae (Callopyllis variegata); Durvillaceae (Durvillaea antartica); Solieriaceae (Euchema cottoni); Gelidiaceae (Gelidium spp); Lossoniaceae (Lesonia nigrescens); Gigantinaceae (Gigartina spp.); Lessoniaceae (Macrocystis spp.); Bangiaceae (Porphyra spp.); Crypthecodinium spp.

(c) Animal origin, normally fish oil, preferably: Engaulidae (Lycengraulis olidus); Clupeidae (Sardina pilchardus); Scomberesocidae (Scomberesox saurus scombroides); Berycidae (Beryx splendens); Engraulidae (Engraulis ringens); Ophichthyidae (Ophichthus spp.); Serranidae

(Hemilutjanus macrophthalmus); Scombridae (Thunnus spp., en especial, Thunnus albacares, Thunnus alalunga, Thunnus obesus); Sciaenidae (Cynoscion analis); Carcharhinidae (Prionace glauca); Normanichthyidae (Normanichthys crockeri); Percichthyidae (Polyprion oxygeneios); Nototheniidae (Dissostichus eleginoides); Apogonidae (Epigonus crassicaudus); Branchiostegidae (Prolatilus jugularis); Scombridae (Thunnus spp., Thunnus albacares, Thunnus alalunga, Thunnus obesus, Sarda spp., Sarda chiliensis, Scomber japonicus peruanus), Sciaenidae (Cynoscion analis), Carcharhinidae, Normanichthyidae (Normanichthys crockeri); Percichthyidae (Polyprion oxygeneios); Nototheniidae (Bacalao de profundidad); Apogonidae (Epigonus crassicaudus); Branchiostegidae (Prolatilus jugularis); Cheilodactylidae (Cheilodactylus gayi); Gadidae (Salilota australis); Pomadasyidae; Scorpaenidae; Serranidae; Cyprinidae; Monacanthidae; Centrolophidae; Ophidiidae; Scorpaenidae; Coryphaenidae; Channichthydae; Sciaenidae; Aplodactylidae; Carangidae (Trachurus symetricus murphyi); Bothidae (Paralichthys microps); Mugilidae; Clupeidae; Priacathidae; Merlucciidae (Merluccius gayi gayi, Merluccius australis); Macruronidae (Macruronus magellanicus); Gadidae (Micromesistius australis); Girellidae; Trachichthyidae; Carangidae; Kyphosidae; Callorhynchidae; Labridae ; Macrouridae; Atherinidae; Gobiesocidae; Alopiidae; Galaxiidae; Rajidae; Bramidae; Carangidae; Nototheniidae; Scianidae; Mugiloididae; Salmonidae (Salmo spp., Salmo salar, Oncorhynchus spp., Oncorhynchus kisutch, Oncorhynchus mykiss, Oncorhynchus tshawytscha); Clupeidae (Sardinops spp., Sardinops

sagax, Clupea bentincki); Pomadasyidae; Gempylidae; Lamnidae (Isurus spp., Isurus oxyrinchus);Triakidae; Clinidae; Scophthalmidae; Labridae; and more preferably Atlantic mackerel, Engraulis encrasicholus, Pomatomus saltatrix, Sarda sarda, Sardina pilchardus, Brevoortia tyrannus, Brevoortia patronus, Chloroscombrus chrysurus, Auxis thazard, Scomber scombrus, Scomber japonicus, Alosa aestivalis, Clupea harengus, Etrumeus teres, Argentina silus, Ictalurus punctatus.

(d) microbial origin, preferably: Saccharomices cerevisiae, Escherichia coli, Schizochytrium spp., Thraustochytrium aureum, Thraustochytrium roseum, Thraustochytrium striatum, Mortiriella spp., Phytium spp., Aspergillus spp. Aspergillus nidulans, Aspergillus sydowi, Fusarium spp., Fusarium equiseti, Fusarium oxysporum.

49.-52. Cancelled.

53. (Original) Formulation of microcapsules to be used for the development of potential intelligence in foetus and breast feeding babies - through the maternal ingestion of a suitable alimentary vehicle in which the formulation of microcapsules is added- and in formulations of milk for babies and children, according the preceding claims, characterized in that contains omega-3 and omega-6 fatty acids in a ratio 0.5 - 10.0, preferably 1.4 - 5.7 and contains cerebrosides in a percentage of 0,005% - 1% and/or optionally compounds (A) and/or (B), also optionally omega-9 fatty acids.

54.-56. Cancelled.

57. (Currently Amended) Microcapsules produced according to ~~any suitable combination of the preceding claims~~ claim 27, characterized in that the are stable (no opening of the microcapsule's wall) at pH higher than 3.5.

58. (Currently Amended) Microcapsules produced according to ~~any suitable combination of the preceding claims~~ claim 27, characterized in that the microcapsules' wall (and subsequent liberation of the content) occurs quickly at pH lower than 3.

59.-71. Cancelled.

72. (Currently Amended) Microcapsules according ~~any suitable combination of the preceding claims~~ claim 27, characterized in that they are used in medicinal formulas, being combined with active ingredients not present in the microcapsules or being the active ingredients present in the microcapsules or formulation of microcapsules the unique active ingredients of the medicinal formula, including under the term medicinal formula materials used for contrast in radiology, seed for radiotherapy, thermotherapy or therapy with light of any wavelength.

73.-79. Cancelled.

80. (Currently Amended) Juice containing microcapsules produced according ~~any suitable combination of the preceding claims~~ claim 27, characterized in that (a) the microcapsules contain omega-3 fatty acids coming from a commercial formulation of edible linseed oil; (b) the oil phase contains the linseed oil and an emulsifier based on soja compounds; (c) the water phase contains a mix of different subclasses of hydrocolloids of the type alginates

and/or Arabic gum and/or kappa-carrageenate and/or guar gum, also an edible primary emulsifier with HLB in between 10 and 14 and an edible viscosity modifier; (d) the pH of the formulation of microcapsules is 3 to 6, the particle size median of the freshly produced microcapsules is 1 - 10 urn; (e) the main ingredient of the juice is orange juice.

81. (Original) Juice according claim 80 characterized in that the fruits are selected from citric fruits, pineapple, grape.

82.-83.- (Cancelled)

REMARKS

It is respectfully requested that this Preliminary Amendment be entered prior to examination. To expedite examination and prosecution of this application, the Examiner is invited to call the undersigned if such action might expedite the prosecution of this application.

Respectfully submitted,

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Dated: June 16, 2006

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